Operating Instructions

Color Monitor

WV-CM146

Panasonic

Before attempting to connect or operate this product, please read these instructions completely

CONTENTS

SA 1965

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

SA 1966

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For U.S.A

Warning:
This equipment generates and uses radio frequency energy and if not installed and used properly, i.e., in strict accordance with the instruction manual, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

The serial number of this product may be found on the rear of the unit.
You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No. _____

Serial No. _____

WARNING:
TO PREVENT FIRE OR ELECTRIC SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

PREFACE

The Panasonic WV-CM146 Color Monitor is designed for use with specified Color CCTV Cameras.
Up to eight cameras can be connected to this monitor. The sequential switching or quad video for these cameras is available.

FEATURES

- Up to 8 solid state color cameras can be connected to Color Monitor WV-CM146 with an alarm feature. (4 VP multiplexed cameras and 4 specified system cameras or 8 specified system cameras)
- The display of the monitor is divided into four screens (quad monitor) to monitor the pictures of four cameras. If cameras are connected, two quad pages are displayed alternately by switching.
- Each camera picture is recorded (as frame) sequentially if time lapse VCR is connected.
- Alarm control output is supplied for a buzzer or chime.
- Alarm period is selectable from 1, 5, 10, 20, 30, 40, 50 or 60 seconds.
- Built-in protection circuit for any misconnection.
- STANDBY mode for no picture on the monitor during sequential switching.
- Monitor has a 14" diagonal screen (13" diagonal actual visual size)
- Sequential switching interval is selectable from 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25 or 30 seconds.
- A CCTV camera with a microphone can be connected to this monitor.
- VCR playback picture can be observed both in quad mode and spot monitoring.
- Reset input for alarm function from Time Lapse VCR.
- Automatic bypass circuit for skipping no camera connection.
- Built-in Automatic Reset Function for Spot Monitor Control Input. An automatic reset time of approx. 60 seconds is preset.
- The following functions are available by using the setup menu:
  - Camera Identification Display
  - Audio Selection
  - Timing Selection
  - SEQ Time Adjustment (SEQ mode)
  - PAGE SEQ (Quad mode)
  - Alarm REC Mode
  - Alarm Buzzer Setting
  - Alarm Time Adjustment
  - Automatic Resetting
  - Bright Compensation Setting

PRECAUTIONS

- Do not block the ventilation slots.
  Place the color monitor at least 5 cm apart from the wall.

- Do not expose the monitor to water or moisture.
  Do not operate the monitor if it becomes wet. Turn power off and ask a qualified service person for servicing. Moisture can damage the monitor and also create the danger electric shock.

- Do not attempt to disassemble the monitor. To prevent electric shock, do not remove screws or cover. There are no user-serviceable parts inside. Ask a qualified service person for servicing.

- Use the appliance under conditions where temperature is from –10°C to +50°C (14°F to 122°F), and humidity is below 90%.
  The input power resource is 120V AC 60 Hz.
  Do not operate the appliance under extreme ambient conditions beyond the specified temperature, humidity, or power resource ratings.

- This model is not produced for rack mounting.

- If more than two appliances are used, do not place them less than 15 cm apart. Otherwise, the appliances may produce noise on the display screen.

- Place the appliance at least 5 cm apart from the wall.

- Do not use it in a car or other places where it may be exposed to severe vibration.

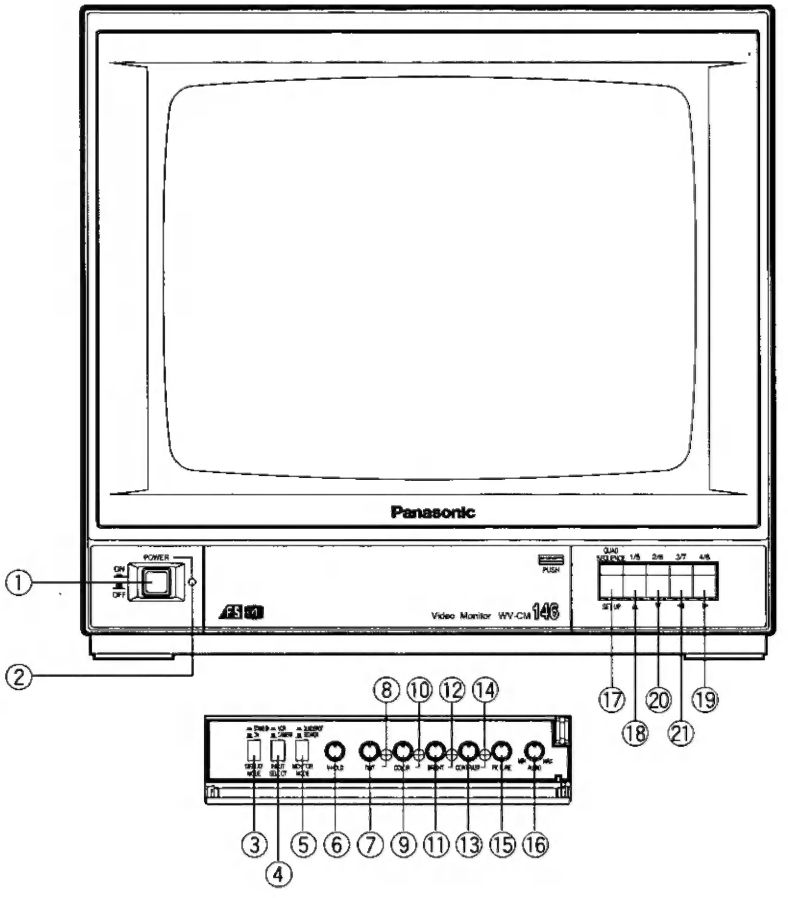
- Do not stack two or more sets.

INPORTANT NOTICE

1. The playback picture of a time lapse VCR in linear mode may be disturbed by another channel picture. In this case, reproduce the disturbed picture or playback the VCR other than in linear mode.
2. The WV-CM146 has no compatibility with the WJ-FS10. The WV-CM146 can playback recorded tapes using the WJ-FS20 without VITC signal.
   The WJ-FS20 can not playback recorded tapes using the WV-CM146.
3. This operating instructions explains the operating procedures for using the monitor with the time lapse VCR; AG-6730, AG-6740, AG-6760 or equivalent.

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS

■ FRONT VIEW



① **Power Switch (POWER)**
This switch turns the power of the monitor on and off.
Press this switch once. The switch remains down (▬) for turning on the power of the monitor.
Press again. The switch comes up (▮) for turning off the power of the monitor.

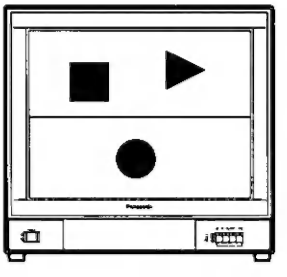
② **Power Indicator**

③ **Display Mode Switch (STAND BY (▬)/ ON(▮))**
ON: Camera picture will appear on the monitor.
STAND BY: Camera picture will not appear on the monitor in sequence mode, but the picture is supplied to REC OUT connector.

④ **Input Select Switch (VCR(▬) CAMERA(▮))**
VCR: The playback picture of VCR that is connected to PLAY IN connector can be observed.
CAMERA: Camera picture that is connected to Camera Input Connectors can be observed.

⑤ **Monitor Mode Switch (QUAD/SPOT, SEQ/VCR)**
QUAD/SPOT: The monitor displays camera pictures for quad mode monitoring and spot monitoring alternately when one of the Camera Selection Switches is pressed.
SEQ/VCR: When INPUT SELECT switch is set to "CAMERA," the sequential switching automatically starts. When INPUT SELECT switch is set to "VCR," direct pictures from VCR can be observed.

⑥ **Vertical Hold Control (V-HOLD)**
This control is preset at the factory.
When the horizontal line appears as illustration below, turn this control to adjust the position of the picture.



⑦ **Tint Control (TINT)**
Turn this control clockwise for purplish color of the picture.
Turn this control counterclockwise for greenish color of the picture.

⑧ **Tint Sub Control**

⑨ **Color Control (COLOR)**
Turn this control clockwise to strengthen the picture color.
Turn this control counterclockwise to weaken the picture color.

⑩ **Color Sub Control**

⑪ **Bright Control (BRIGHT)**
Turn this control clockwise to increase the picture brightness.
Turn this control counterclockwise to decrease the picture brightness.

⑫ **Bright Sub Control**

⑬ **Contrast Control (CONTRAST)**
Turn this control clockwise to increase the picture contrast.
Turn this control counterclockwise to decrease the picture contrast.

⑭ **Contrast Sub Control**

⑮ **Picture Adjustment**
Turn this control clockwise for a sharp picture.
Turn this control counterclockwise for a soft picture.

⑯ **Audio Control (AUDIO, MIN/MAX)**
Turn this control clockwise to increase the audio level.
Turn this control counterclockwise to decrease the audio level.

⑰ **Quad/Sequence, Set up Selection Switch (QUAD/SEQUENCE, SET UP)**
Press this switch to display the picture of quad or sequential mode.
To display the set up menu, press this switch more than 2 seconds.

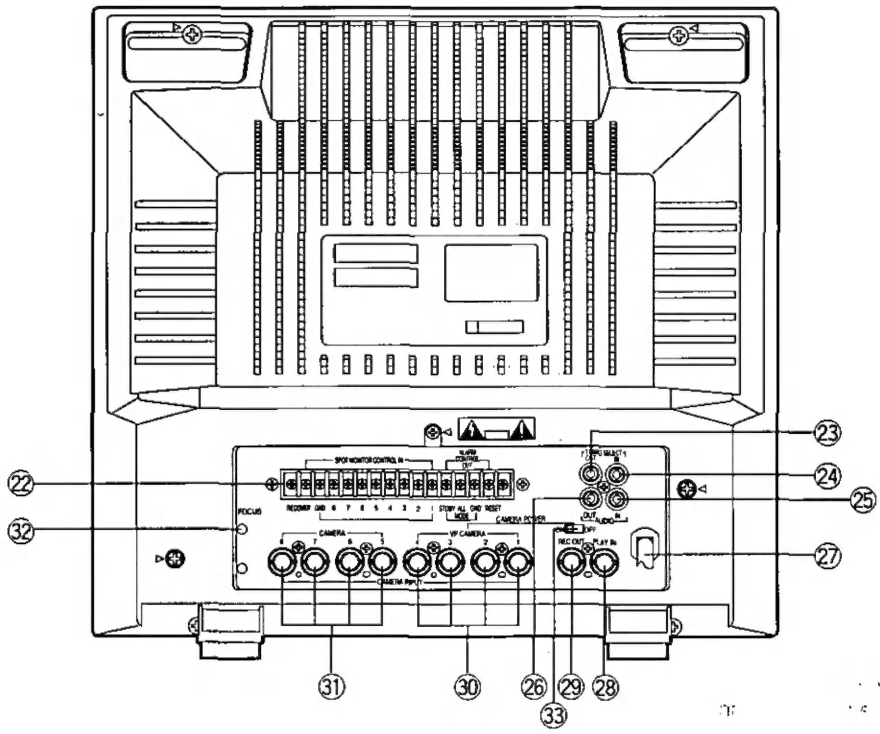
⑱ **Camera Selection Switch (1/5)/Up Switch (▲)**

⑲ **Camera Selection Switch (2/6)/Down Switch (▼)**

⑳ **Camera Selection Switch (3/7)/Left Switch (◄)**

㉑ **Camera Selection Switch (4/8)/Right Switch (►)**

■ REAR VIEW



㉒ **External Control Connection Terminals**

ALARM CONTROL OUT
These terminals are used to supply the alarm control signal to external equipment such as Time Lapse VCR or buzzer. When an intercom or alarm sensor is connected to the spot monitor control terminal, this connector is valid.

RESET:
The alarm reset output signal is supplied to this terminal for external equipment.

STAND BY-GND Connection:
The alarm output signal is supplied only when DISPLAY MODE is at "STAND BY."

ALL MODE-GND Connection:
The alarm output signal is supplied regardless of display mode.

SPOT MONITOR CONTROL IN (1-8):
These terminals are used to receive the alarm control signal from intercom or alarm sensor.

RECOVER:
This terminal is used to reset the spot camera picture, and return to the sequential operation by receiving the recover signal.

㉓ **Timing Select Output Connector (TIMING SELECT, OUT)**
This connector supplies the timing pulse signals for switching in the sequence operation of other extensible systems, such as another CCTV system or sequential switcher. This connector sends the signal that is supplied to TIMING SELECT IN connector.

㉔ **Timing Select Input Connector (TIMING SELECT, IN)**
This connector receives the external timing pulse for the sequential operation of the time lapse VCR or another CCTV system.

㉕ **Audio Input Connector (AUDIO IN)**
This connector receives the audio signal from an external source, such as a VCR, for monitoring sounds from the internal speaker.
Connect an audio cable between this connector and AUDIO OUT connector of external equipment.

㉖ **Audio Output Connector (AUDIO OUT)**
This connector supplies the audio signal to external equipment.
Connect an audio cable between this connector and AUDIO IN connector of external equipment.

㉗ **Power Cord**
Caution: 120V AC source only.

㉘ **Playback Input Connector (PLAY IN)**
This connector receives the video signal from an external source such as a VCR for monitoring.
Connect a video cable between this connector and the VIDEO OUT connector of external equipment.
Note: Set INPUT SELECT switch to "VCR" to monitor VCR pictures.

㉙ **Record Output Connector (REC OUT)**
This connector supplies the video signals of the cameras to an additional monitor or VCR.
The video signal of the camera is supplied to this connector even if DISPLAY MODE switch is set to "STAND BY."

㉚ **Camera Input Connectors (CAMERA INPUT 1/2/3/4, VP CAMERA)**
These connectors are used to connect a single coaxial cable to the specified VP Multiplexed Cameras.
These connectors supply DC power and vertical drive pulse to the cameras, and receive video signals from the cameras.
Notes:
- Be sure to connect only the Specified VP Multiplexed Cameras.
- If a camera is connected while monitor power is on, the camera will be prevented from normal operation by the protection circuit for misconnection.
- The Specified System Cameras can be connected to these connectors instead of the VP Multiplexed Cameras.

Caution:
Set CAMERA POWER ON/OFF switch to "OFF" before connecting the Specified System Cameras to these connectors.
Specified System Camera: Panasonic VD2 multiplexed camera

㉛ **Camera Input Connectors (CAMERA INPUT 5/6/7/8, CAMERA)**
These connectors are used to connect a single coaxial cable to the Specified System Cameras.

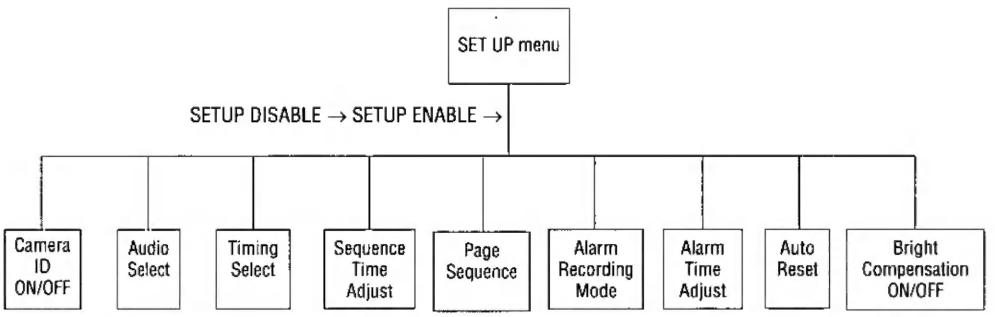
㉜ **Focus Control**
This control is preset at the factory.
Do not turn this control. When adjustment is required, ask a qualified service person for help.

㉝ **Camera Power On/Off Switch (CAMERA POWER, ON/OFF)**
ON: Set to this position to use the VP Multiplexed Cameras.
OFF: Set to this position to use the Specified System Cameras (VD2).
No power supply to the cameras.
Caution: Set this switch before connecting the cameras. Otherwise, it may damage the cameras.

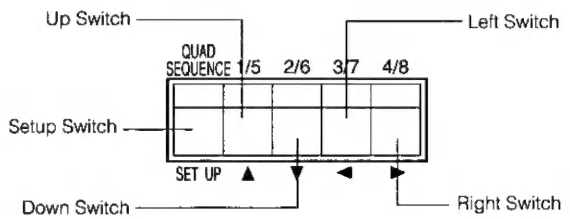
SETUP OPERATION

1. SET UP MENU

Make sure that the connection of cameras, peripherals, or alarm connectors is correct and firm. The SET UP MENU is not displayed if no camera is connected. (Refer to "CONNECTIONS" on page 14.)
This menu is described in the following section 3 "SET UP MENU DESCRIPTION" in detail.
Set DISPLAY MODE to ON to display SET UP MENU.
Set the INPUT SELECT switch to CAMERA to display the SET UP MENU. If you select VCR, the SET UP MENU is not displayed.



A set up operation can be performed with the following switches on the front panel.



Up Switch:	The cursor moves upwards.
Down Switch:	The cursor moves downwards.
Left Switch:	The cursor moves to the left. The mode is selected by this switch. Some levels can be adjusted with this switch.
Right Switch:	The cursor moves to the right. The mode is selected by this switch. Some levels can be adjusted with this switch.
Set up Switch:	The menu is selected by this switch.

2. SETUP ORDER

When camera set up is required, proceed according to the following steps.

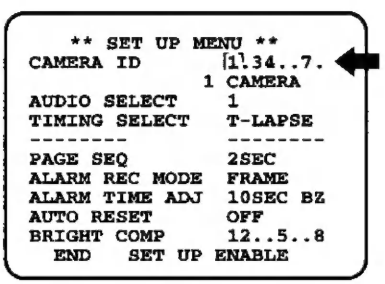
(1) Display the SET UP MENU by pressing QUAD/ SEQUENCE, SET UP switch more than 2 seconds.
(2) Edit CAMERA ID (Camera Identification Setting).
(3) Set AUDIO SELECT (Audio Selection).
(4) Set TIMING SELECT (Timing Selection).
(5) Set SEQ TIME ADJ (Sequential Time Adjustment).
(6) Set PAGE SEQ (Page Sequence).
(7) Set ALARM REC MODE (Alarm Recording Mode Setting).
(8) Set ALARM TIME ADJ (Alarm Time Adjustment/ Alarm Sound On/Off Setting).
(9) Set AUTO RESET (Auto Reset On/Off Setting).
(10) Set BRIGHT COMP (Bright Compensation Setting).

3. SET UP MENU DESCRIPTION

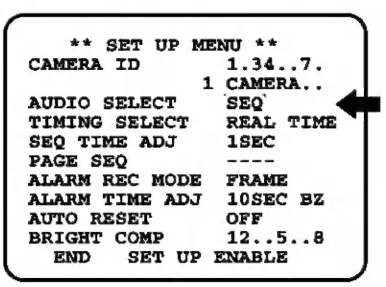
3-1. Camera Identification (CAMERA ID)

Up to 8 characters (alphanumeric) for camera identification can be displayed on the top line of the picture.

Display or no display of camera ID can be set on the first line of this item, and displayed characters can be edited on the second line.
Note: Refer to "Setting Procedures" for details.

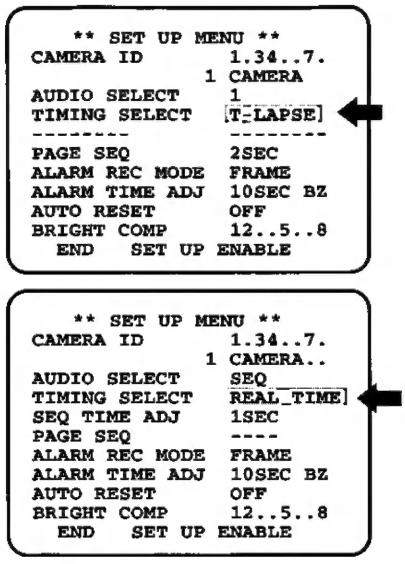


3-2. Audio Selection (AUDIO SELECT)



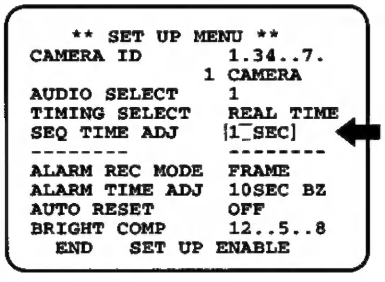
Select the audio signal from SET UP MENU (SEQ, 1, 2, 3, or 4.)
SEQ: The audio signal changes automatically when the camera picture changes.
1-4: The audio signal is fixed on the desired channel.

3-3. Timing Selection (TIMING SELECT)



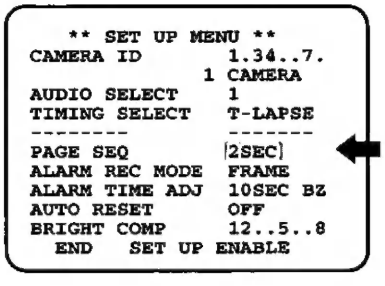
Select video/audio switching timing on SET UP MENU (REAL TIME or T-LAPSE).

3-4. Sequential Time Adjustment (SEQ TIME ADJ)



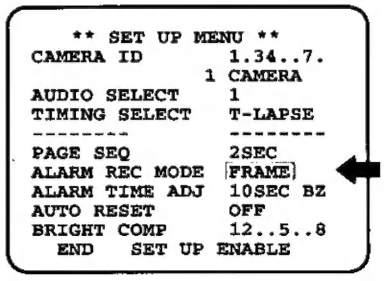
This menu appears only when REAL TIME is selected for TIMING SELECT while SEQ/QUAD is selected for MONITOR MODE.
Select sequential time from 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, or 30 seconds.

3-5. Page Sequence (PAGE SEQ)



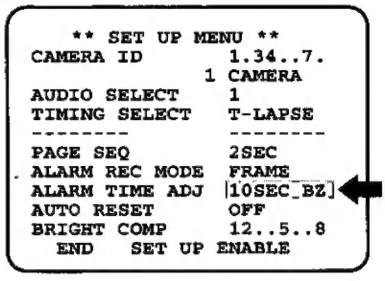
Select a quad page sequential time on SET UP MENU (OFF, 1-30 seconds.)

3-6. Alarm Recording Mode Setting (ALARM REC MODE)



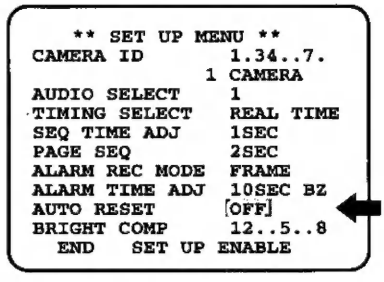
Select alarm recording mode on SET UP MENU (FRAME or SPOT.)

3-7. Alarm Time Adjustment (ALARM TIME ADJ)



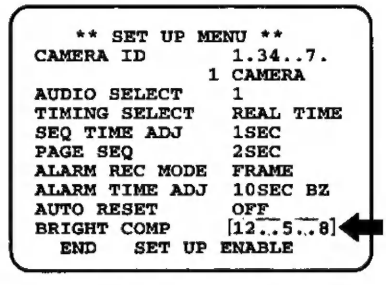
Set alarm (BZ) on or off with SET UP switch. When "BZ" is set on, adjust the alarm time on SET UP MENU.

3-8. Automatic Reset On/Off Setting (AUTO RESET)



Set Automatic Reset On or Off on SET UP MENU (ON or OFF.)

3-9. Bright Compensation (BRIGHT COMP)



Select bright compensation (1-8) on SET UP MENU.

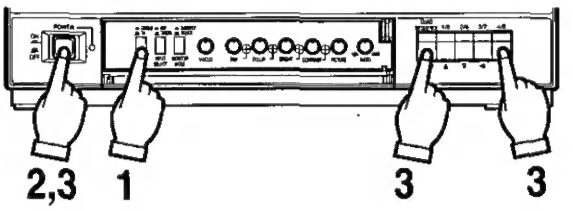
• All Reset Operation

All reset helps you escape from confusion in set up menu operation. The steps to reset are follows:

(1) Make sure that DISPLAY MODE switch is set to "ON and" INPUT SELECT switch to "CAMERA" and that the SET UP MENU is not displayed.

(2) Turn off the power of this monitor.

(3) Turn on the power of this monitor while pressing SET UP switch and the Right switch simultaneously.
All adjustments and selections are reset to the factory settings.



• Entering the SET UP MENU

```
    ** SET UP MENU **
CAMERA ID         1.34..7.
                1 CAMERA
AUDIO SELECT      1
TIMING SELECT     REAL TIME
SEQ TIME ADJ      1SEC
PAGE SEQ          2SEC
ALARM REC MODE    FRAME
ALARM TIME ADJ    10SEC BZ
AUTO RESET        OFF
BRIGHT COMP       12..5..8
 [END]   SET UP DISABLE
```

Blinking

Press and hold down SET UP switch for 2 seconds or more.
The "SET UP MENU" is displayed on the monitor as shown above.
By observing this menu, you can check the present conditions.
Refer to the following sections for details of each item.
After confirming that the present conditions and further resetting of each item are not required, move the cursor to "END" on the left end of the bottom line, and press SET UP switch to return to normal camera picture mode.

Important Notice:

When the "SET UP DISABLE" is displayed on the bottom line of the SET UP MENU, you can not enter into actual mode setting. This prevents the wrong mode setting.

• Editing the SET UP MENU

To edit the SET UP MENU (resetting/re-adjustment,) move the cursor to the bottom line using the Up/Down switch, and move the cursor to "SET UP DISABLE" using the Right switch or Left switch. Press SET UP switch.
"SET UP ENABLE" will be displayed.

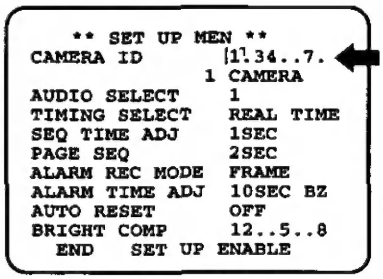
Move the cursor to the desired item to be reset and re-adjust till you reach "END."

Important Notice:

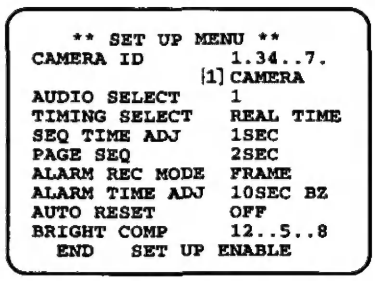
When the cursor is moved to END and you close the SET UP MENU after changing the data (ex. ON-OFF,) the latest data is written on the memory (Electric Erasable) and Programmable Read Only Memory (EEPROM) so that it remains until additional data is written even if the power of this monitor is off.

■ Setting Procedures

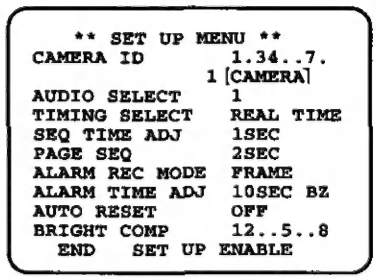
1. Camera Identification Setting (CAMERA ID)



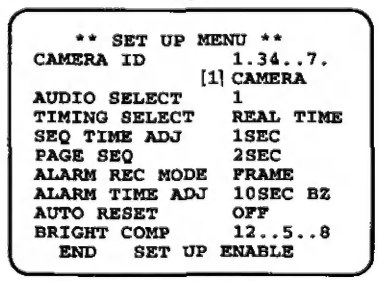
Press the Down switch (▼).



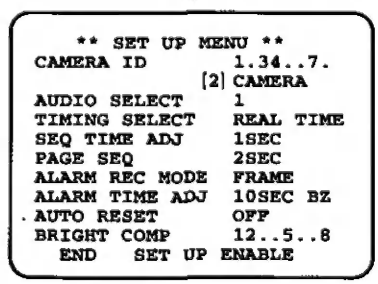
Press SET UP switch.



After completing the selection, press SET UP switch.



Press the Right switch (►).



1-1. Move the cursor to "CAMERA ID," and select the desired camera using the Left (◄) or Right switch (►).
To display camera identification, press SET UP switch.

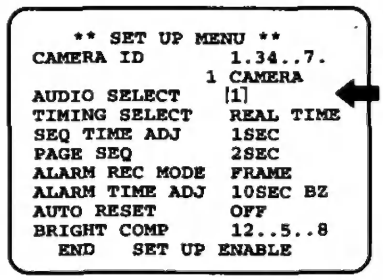
1-2. After completing item 1, move the cursor to the second line using the Down switch (▼).
Set camera identification as in 1-3 below and press SET UP switch.
To register the camera identification, move the cursor back to "CAMERA ID."

1-3. Selectable characters are shown below.

0 1 2 3 4 5 6 7 8 9 : ; A B C D E F G H I J K L M N
O P Q R S T U V W X Y Z " # ' ( )
* + , - . / ← = → · (blank)

Characters can be selected using the Up (▲) or Down switch (▼).
Column can be selected using the Left (◄) or Right switch (►).
After selecting them, press SET UP switch.
To select "CAMERA ID" of other camera, press the Left (◄) or Right switch (►).

2 Audio Selection (AUDIO SELECT)



2-1. Move the cursor to "AUDIO SELECT."
Select "SEQ" (sequential) or "1, 2, 3, 4" (fixed) using the Left (◄) or Right switch (►).

2-2. In "SEQ," the audio signal is also switched according to channel switching.

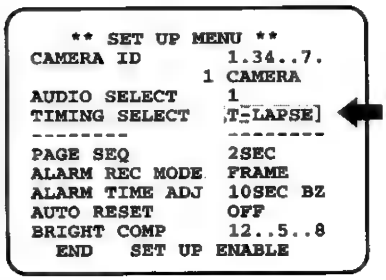
2-3. In "1, 2, 3, 4" (fixed,) the audio signal is fixed to the selected channel.

Note: During the fixed channel is selected, the audio of the selected channel changes to the alarmed channel if the alarm signal is received.

The following table shows the audio sequential time when SEQ is selected for AUDIO SELECT.

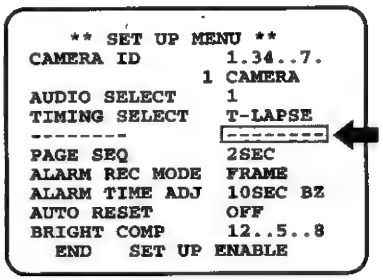
TIMING SELECT / MONITOR MODE	REAL TIME	T-LAPSE
QUAD/SPOT	Picture to be displayed: changes frame by frame. Audio output: can be selected from approx. 1-30 sec.	Picture to be displayed: changes with the timing you set on the time lapse VCR. **Audio output: changes at the time set on the time lapse VCR.**
SEQ/VCR	Picture to be displayed: can be selected from approx. 1-30 sec. Audio output: changes at the same time as the picture.	Picture to be displayed: changes at the time set on the time lapse VCR. Audio output: changes at the time set on the time lapse VCR.

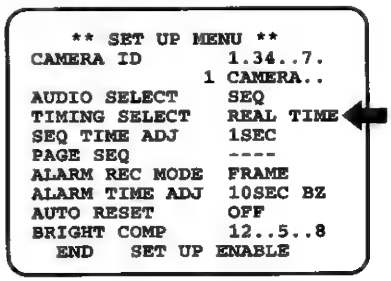
3. Timing Selection (TIMING SELECT)



3-1. Move the cursor to "TIMING SELECT."
3-2. Select "REAL TIME" (real timing) or "T-LAPSE" (time lapse timing) using the Left (◄) or Right Switch (►).
Note: Set this item to "T-LAPSE" when the timing signal is input from the time lapse VCR. When the timing pulse from the time lapse VCR has not been supplied for a short time, REAL TIME is automatically selected.

4. Sequential Time Adjustment (SEQ TIME ADJ)



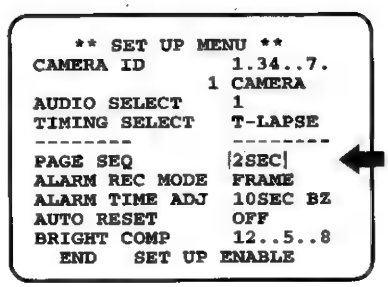


In case of T-LAPSE is selected for TIMING SELECT, sequential time synchronizes with the switching signal of the time lapse VCR. You cannot set by this monitor.
In case of REAL TIME is selected for TIMING SELECT, you can select one of the two sequential time adjustments by MONITOR MODE switch;

1. When QUAD/SPOT is selected for MONITOR MODE, the sequential time is automatically set to the switching frame by frame.
2. When SEQ/VCR is selected for MONITOR MODE, you can select the sequential time from approx. 1-30 seconds. (The recording output to VCR is switched frame by frame.)
   Also sequential time of SEQ for AUDIO SELECT is set in this menu (1-30 sec.).

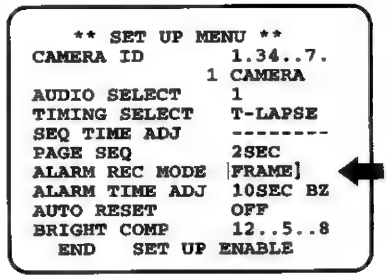
4-1. Move the cursor to "SEQ TIME ADJ."
4-2. Select sequential time using the Left (◄) or Right switch (►).
Sequential time can be selected from approx. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, or 30 seconds.

5. Page Sequence (PAGE SEQ)



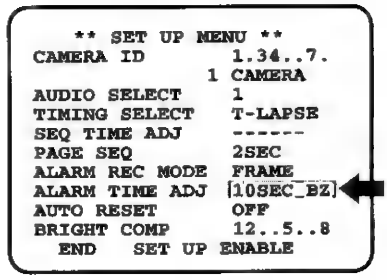
5-1. Set MONITOR MODE to QUAD/SPOT.
5-2. Move the cursor to "PAGE SEQ."
5-3. Select the sequential time of the quad page using the Left (◄) or Right switch (►).
The switch timing of sequential pages can be selected from approx. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, or 30 seconds.

6. Alarm Recording Mode Setting (ALARM REC MODE)



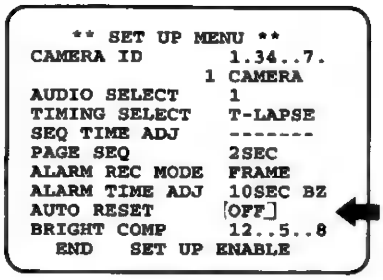
6-1. Move the cursor to "ALARM REC MODE."
6-2. Select alarm recording mode from FRAME or SPOT using the Left (◄) or Right switch (►).

7. Alarm Time Adjustment (ALARM TIME ADJ)



7-1. Move the cursor to "ALARM TIME ADJ."
7-2. Adjust the alarm time to 1, 5, 10, 20, 30, 40, 50, or 60 seconds using the Left (◄) or Right switch (►).
Note: Alarm buzzer on or off can be set with the SET UP switch.
"BZ" appears when the alarm buzzer is set on. If "BZ" is not displayed on the monitor, the alarm buzzer is not set on.

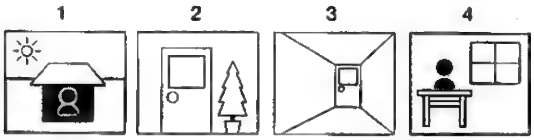
8. Automatic Reset On/Off Setting (AUTO RESET)

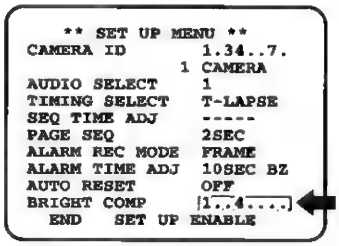


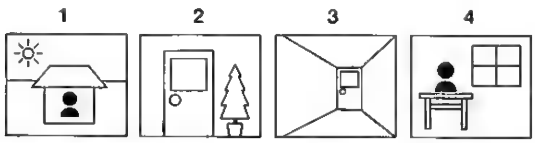
8-1. Move the cursor to "AUTO RESET."
8-2. Set the Automatic Reset On or Off using the Left (◄) or Right switch (►).

9. Bright Compensation (BRIGHT COMP)

9-1. Move the cursor to "BRIGHT COMP."
9-2. The desired camera can be selected using the Left (◄) or Right switch (►).
9-3. Bright Compensation On/Off mode can be selected using SET UP switch.
This function provides suitable picture conditions in quad or sequential mode.







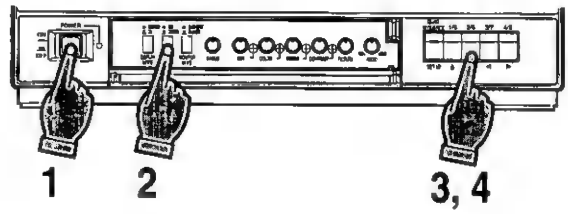
"BRIGH COMP" ON OFF OFF ON

Caution:

This function only works on the screen in quad or sequential mode.
Video signals with compensated brightness will not be supplied from REC OUT connector.
While watching reproduced pictures, adjust them with BRIGHT or CONTRAST control on the front panel.

OPERATING PROCEDURES

■ Selection of Camera

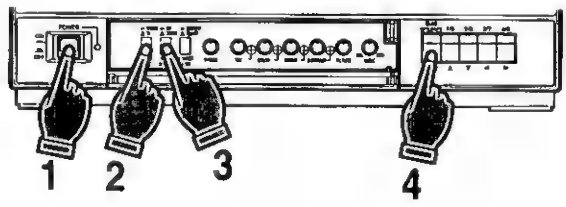


1. Press POWER switch on the monitor to turn it on.
2. Set INPUT SELECT switch to "CAMERA."
3. Press the Camera Selection Switch to select the desired camera picture.
4. Press the Camera Selection switch once again to display the camera picture 5, 6, 7, or 8. Two pictures will be displayed alternately if this switch is pressed repeatedly.

Caution:

When POWER switch on the monitor is turned on and off repeatedly in a short period of time, the camera may not be turned on due to the protection circuit for misconnection.
In this case, leave the switch at "OFF" for a few seconds before turning on again.
When power is turned on, no camera picture appears for a minute because of initializing.
"VD2 SET UP" appears on the display to show the setting process.

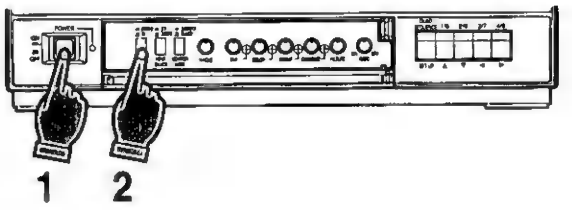
■ Quad Mode Monitoring



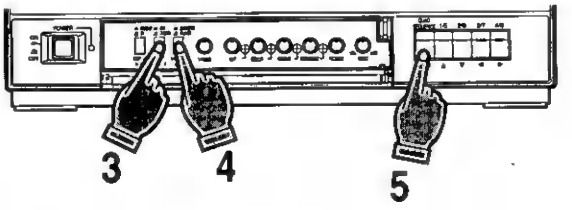
1. Press POWER switch on the monitor to turn it on.
2. Set DISPLAY MODE switch to "ON."
3. Set INPUT SELECT switch to "CAMERA."
4. Set MONITOR MODE to "QUAD". Quad picture will be displayed.
5. By pressing QUAD/SEQUENCE, SET UP switch, page A (camera 1-4) and page B (camera 5-8) are displayed alternately.

Note: The screen is totally black without a picture if no video signal is present at the CAMERA INPUT connector.

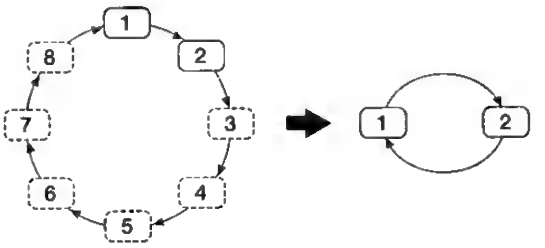
■ Sequence Mode Monitoring (more than two cameras)



1. Press POWER switch on the monitor to turn it on.
2. Set DISPLAY MODE switch to "ON."

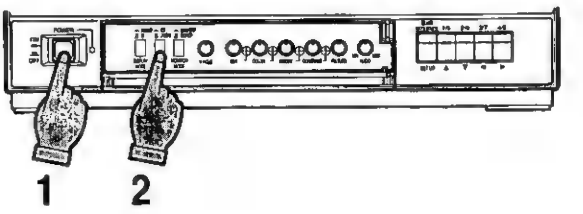


3. Set INPUT SELECT switch to "CAMERA."
4. Set the MONITOR MODE switch to "SEQ/VCR."
5. Press the QUAD/SEQUENCE, SET UP switch.
   The camera pictures are displayed in a sequence on the monitor.

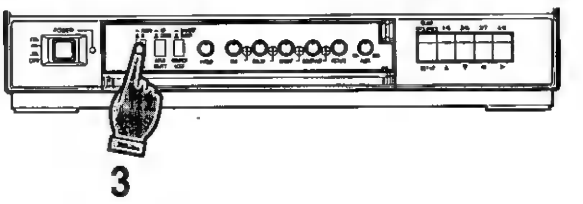


Note: In sequential switching the input connector, without connected cameras will be automatically skipped.
You can monitor the picture in sequential mode, but the output signal to the time lapse VCR is switched frames by frames.

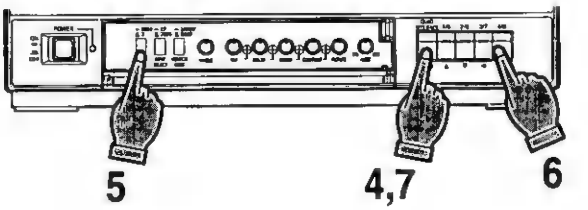
■ Standby mode Monitoring picture



1. Press POWER switch on the monitor to turn it on.
2. Set INPUT SELECT switch to "CAMERA."



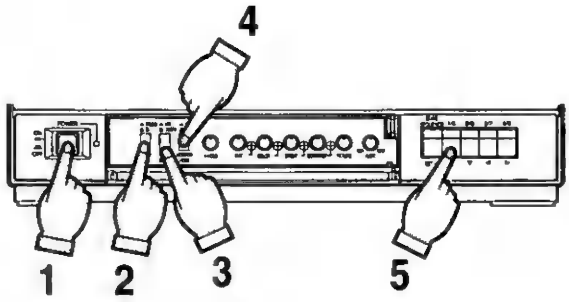
3. Set DISPLAY MODE switch to the "ON."



4. Press QUAD/SEQUENCE, SET UP switch.
   The camera pictures are displayed in the sequence or quad mode on the monitor.
5. Set DISPLAY MODE switch to "STAND BY." The picture on the monitor disappears, but the sequential switching is actually carried out and the picture to REC OUT connector on the rear of the monitor can be observed.
6. When a camera picture is observed, press the desired Camera Selection Switch to display the selected camera picture on the monitor.
7. By pressing QUAD/SEQUENCE, SET UP switch again, the picture on the monitor disappears and sequential switching returns to STAND BY mode.
   During spot monitoring, you can not select STAND BY mode.

■ Monitoring VCR playback

- **Spot picture Playback**



1. Press POWER switch on the monitor to turn it on.
2. Set DISPLAY MODE to ON.
3. Set INPUT SELECT to VCR.
4. Set MONITOR MODE to QUAD/SPOT.
5. Press the desired camera selection switch.

Caution:

Unless recorded by WV-CM146 video tapes cannot be played back in QUAD or SPOT monitor mode.
Only tapes recorded by WJ-FS20 without VITC signal can be played back.

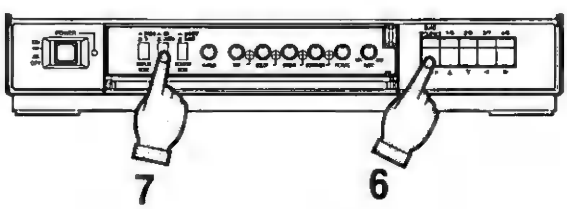
- **Quad picture playback**

Proceed as in steps 1-5 of "spot picture playback" above, then follow the steps below;

6. Press QUAD/SEQUENCE, SET UP switch.

- **Playbacks with fast forward (FF), rewind (REW), and pause VCR controls.**

7. Set MONITOR MODE to SEQ/VCR.



IMPORTANT NOTICE

- This model cannot clearly reproduce pictures backward.
- In playback mode, the pictures may go unstable a few times (there is nothing wrong with this model.)
- Depending on the head condition of the VCR, the picture of another channel may appear on the display. If this occurs frequently, adjust the tracking or slow-tracking of the VCR. This will diminish the wrong channel appearance.
- In playback mode, the skew (playback picture pulled to horizontal direction) may appear in each playback (there is nothing wrong with this model.)
- In quad monitor mode, four divided displays are smaller in size than normal. That makes the recorded characters hard to read. Selecting spot monitor to display one camera picture makes it easy to read the characters.
- Playback in linear mode (L12H, L18H, L24H) may produce noise or playback the picture of the other channel is reproduced on the display in any recording mode of the time lapse VCR.
- During playback, the horizontal line may appears on the display sometimes. This does not mean there is something wrong with this monitor.

■ Recording on Time Lapse VCR

Set the time lapse VCR in recording mode.

1. **Time Lapse Recording**

- Move the cursor to TIMING SELECT on SET UP MENU, and select T-LAPSE.
- Time lapse recording is performed with camera switching pulse supplied by time lapse VCR.
- If no timing pulse comes from the time lapse VCR for a certain time, the timing is switched to REAL TIME automatically.
- When the WV-CM146 receives the alarm signal, recording timing changes to real time. This means the camera picture is recorded in recording mode you selected on SET UP MENU.
- When the alarm reset pulse is received from the time lapse VCR, or in case AUTO RESET of SET UP MENU is set to ON, recording mode returns to time lapse recording mode.
- It is possible to record in linear slow recording mode on the VCR. In linear slow recording mode, you can record not only camera picture but also audio. (You cannot record audio in time lapse mode.)
- If AUDIO SELECT is set to SEQ on SET UP MENU, you can record audio from the alarm channel when alarm signal is received.

Note:

When SEQ is selected for AUDIO SELECT, the recorded picture and audio are not synchronized.

■ Setting Up Time Lapse VCR (AG-6730, AG-6740)

When using the AG-6730 or AG-6740 with WV-CM146, read the operating instructions for AG-6730 or AG-6740 and confirm the following points.

A. Menu Screen 3

1. Item-3 : Select an input video signal to the LINE.
2. Item-5 : Set the time to 9:00 AM.
3. Item-6 : Assign VCR as either Master or Slave.

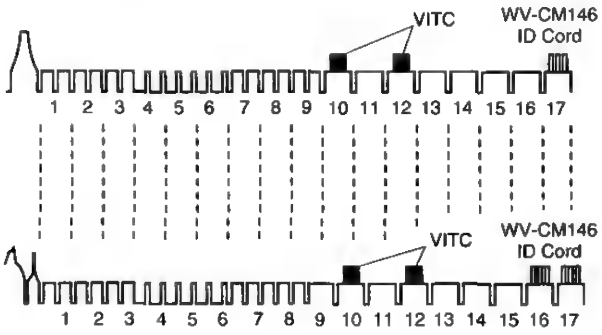
B. Menu Screen 4

1. Select HIGH alarm reset pulse acceptance level.
2. Item-6 : Set the camera switch timing to 1 FIELD.
3. Item-7 : Set TM2 camera switching mode.

C. VITC signal (option)

Do not align this signal with ID-code of WV-CM146. The VITC should be placed at 10H or 12H.

• VITC Signal (10H and 12H)



Real Time Recording

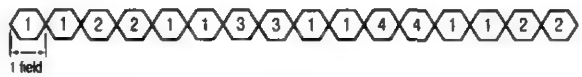
- Move the cursor to TIMING SELECT on SET UP MENU, and select REAL TIME.
- Real time recording is performed with camera switching pulse supplied by WV-CM146.
- The pictures from each camera change frame to frame.
- The recording speed of the time lapse VCR should be set to 2 hours recording mode.
- You can record not only camera pictures but also the audio in real time.

  Note: If no camera is connected to any channels, a black picture may be mixed on the tape sometimes. This does not mean there is something wrong with this monitor.

Alarm Recording Mode

When alarm signal is received, you can select one of the following two recording modes;

1. **Alarm Channel Priority Recording (FRAME)**
   The channel that received the alarm signal has priority of recording.
   The illustration below shows the REC OUT signal in case 1 ch receives the alarm signal.



2. **Alarm Channel Spot Recording (SPOT)**
   Only the channel that receives the alarm signal is recorded.

The picture from the VCR are displayed on the monitor by operating MONITOR MODE switch and INPUT SELECT switch.
The following table shows the switching of picture and audio with MONITOR MODE switch and INPUT SELECT switch.

MONITOR MODE / INPUT SELECT	QUAD/SPOT	SEQ/VCR
CAMERA	Picture to be displayed : QUAD (1-4ch/5-8ch) SPOT (1 - 8ch) Audio output : SEQUENCE (1-4ch*1) SPOT (1 - 4 ch*1)	Picture to be displayed : SEQUENCE (1 - 30sec.) SPOT (1 - 8ch) Audio output : SEQUENCE (1 - 4ch) SPOT (1 - 4 ch)
VCR	Picture to be displayed : (VCR playback picture supplied from PLAY IN connector.*2) QUAD (1 - 4ch/5-8ch) SPOT (1 - 8ch) Audio output : Output from AUDIO IN connector	Picture to be displayed : Direct video picture supplied from PLAY IN connector. Audio output : Output from AUDIO IN connector

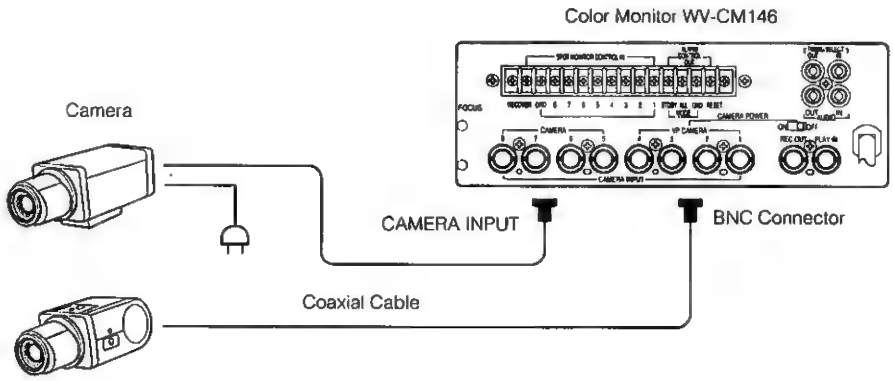
*1 When an alarm signal is supplied, the audio from the channel that receives the alarm signal sounds.
*2 In QUAD, SPOT mode, only recorded tapes by WV-CM146, and recorded tapes by WJ-FS20 with no VITC signal can be reproduced.

CONNECTIONS

Precautions :

1. These connections should be made by qualified personnel or system installers.
2. Keep the power switches on the monitor and optional camera in the "OFF" position while connecting them.

■ Connection with cameras



- Connect single coaxial cables between the cameras and monitor (CAMERA INPUT). The maximum coaxial cable length is as follows;

Coaxial Cable Type	Maximum Cable Length	DC R/1000 ft. of Inner Conductor
RG-59/U	200 m (660 ft.)	Less than 30 Ω
RG-6/U	500 m (1650 ft.)	Less than 12 Ω

The maximum DC resistance of the coaxial cable between the cameras and video monitor is 20 Ω.

Caution:

1. Keep the monitor switched off during camera connection.
2. CAMERA INPUT 1/2/3/4 connectors are used to connect specified camera (multiplexed VP camera).
3. CAMERA INPUT 5/6/7/8 connectors are used to connect specified system camera (multiplexed VD camera).
   The specified system camera can be connected to 1-8ch if the CAMRA POWER switch is set to OFF.
4. If a camera picture is lost while this monitor is live, the alarm sounds and "CHXX LOSS" appears on the display. The camera picture will return by pressing SET UP, QUAD/SEQUENCE switch or camera selection switch. The alarm signal is supplied only when CAMERA is selected for INPUT SELECT.

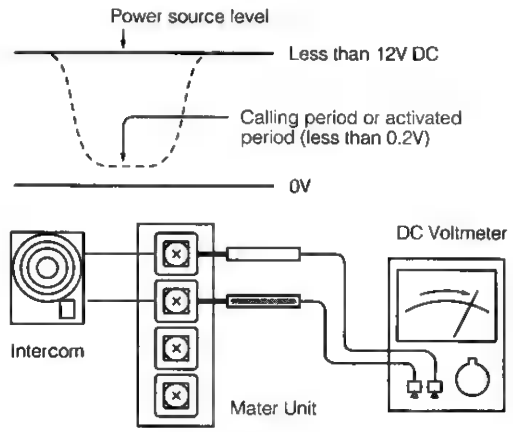
Note:

The specified cameras (multiplexed VP camera) or the specified system cameras (multiplexed VD camera) to be connected with this monitor must be Panasonic models. If cameras of other make are connected, this monitor will not work correctly.

If the display of "VD2 SET UP" does not close or the display of "VD2 SET UP" cut in during monitoring, the cameras may be out of order. Confirm the camera model before connecting them.

■ Connection with the Intercom and Alarm Sensors/Switches

- Use two wire connection for intercom system and alarm sensor /switches.
- The power source for intercom system and alarm sensors/switches should be less than DC 12V.
- When the intercom or alarm sensor/switch activates, the line voltage for intercom or alarm sensor/switch should be DC 0 - 0.2V.



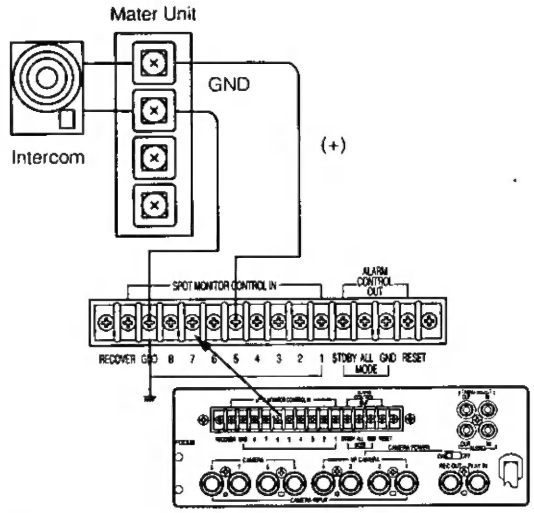
There are limit on wire length in connecting an intercom system, alarm sensor system, optional units, and video monitor.

For example, the wire length limits an intercom system are as follows ;

Wires (mm/Q'ty)	Equivalent AWG	SWG	Maximum Wiring length
0.18/12	22	23	150m
0.18/20	20	21	250m
0.18/30	18	19	400m
0.18/50	16	17	600m

AWG: American Wire Gauge
SWG: British-Legal Standard Wire Gauge

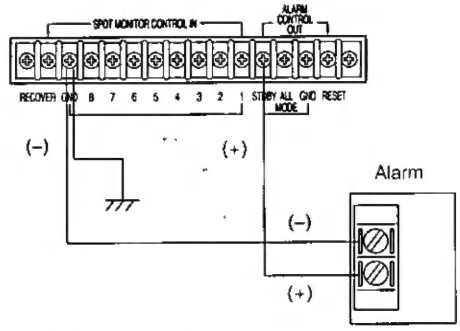
The polarities of the intercom system and the Spot Monitor Control In of the monitor should be matched. Check the polarities of the intercom system by tester (meter).



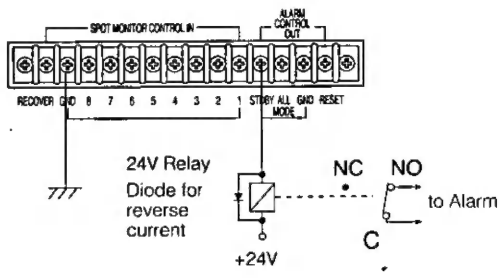
Do not connect on AC intercom system.
Two modes can be selected for the Alarm Control Out works in.

STD BY: In case of STAND BY for DISPLAY MODE is selected, this terminal works when SPOT CONTROL IN receives the signals from intercom or alarm sensor/ switch.

ALL MODE: Regardless of which DISPLAY MODE is selected, this terminal works when SPOT CONTROL IN receives the signals from intercom or alarm sensor/ switch.



The polarities for the alarm and Alarm Control Output of the monitor should be matched.
The power rate of the alarm should be DC 24 V, max. 100mA.
If the power capacity of the alarm is less than 100 mA, DC 24V, it can be connected to the terminal of Alarm Control Out directly.
If the power capacity of the alarm is more than 100mA, DC24V, it can not be connected to terminal directly. In this case, a relay circuit should be used for the alarm.



■ Auto Reset

This monitor has an auto reset circuit that resets automatically 60 seconds after the intercom or alarm sensor signal is supplied.
Set AUTO RESET to ON on SET UP MENU.
AUTO RESET activates as follows;

1. **In case of using alarm sensors system**
   The camera that in linked to the alarm signal is selected. After about 60 seconds, the camera picture returns to sequential switching mode.

2. **In case of using intercom system**
   a. On communication
   The camera that is linked to the intercom signal is selected. The camera picture keeps displayed while the intercom is on line. The camera picture returns to sequential switching when the line is disconnected.
   b. Calling by the beeper/chime
   The camera which is linked to the intercom signal is selected.
   After about 60 seconds, the camera picture returns to sequential switching mode.

3. **In case of using the time lapse VCR**
   The camera which is linked to the intercom/alarm signal is selected. After about 60 seconds, the camera picture returns to sequential switching mode.

■ Connection with VCR

1. Connect the PLAY IN connector of the monitor to the VIDEO OUT connector of the time lapse VCR with a BNC cable.
2. Connect the REC OUT connector of the monitor to the VIDEO IN connector of the time lapse VCR with a BNC cable.
3. Connect the TIMING SELECT IN connector of the monitor to the CAMERA SW OUT connector of the time lapse VCR with an RCA cable.
4. Connect the AUDIO IN connector of the monitor to the AUDIO OUT connector of the time lapse VCR, and the AUDIO OUT connector of the monitor to the AUDIO IN connector of the time lapse VCR with an RCA cable.

Important Notices:

- Set TIMING SELECT to T-LAPSE on SET UP MENU and connect the TIMING SELECT IN connector of the monitor to the CAMERA SW OUT connector with an RCA cable to record by the time lapse VCR.
- Set the alarm recording mode of the time lapse VCR to 2H (2 hours.)
- When you record in linear mode (L12H, L18H, L24H) pay attention to the following;

1. Make sure the connections are correct as described above.
2. During playback, the pictures of other channels or noise may appear on the display. In this case, playback after selecting NORMAL MODE (2H/6H) or TIME LAPSE MODE of recording.

Setting of the VCR

Set the VCR as follows;

Example: AG-6730, AG-6740, AG-6760

MENU 3

[VIDEO]	IN	LINE
[TIME ADJUSTING]	SET TIME OPERATION	9:00 MASTER

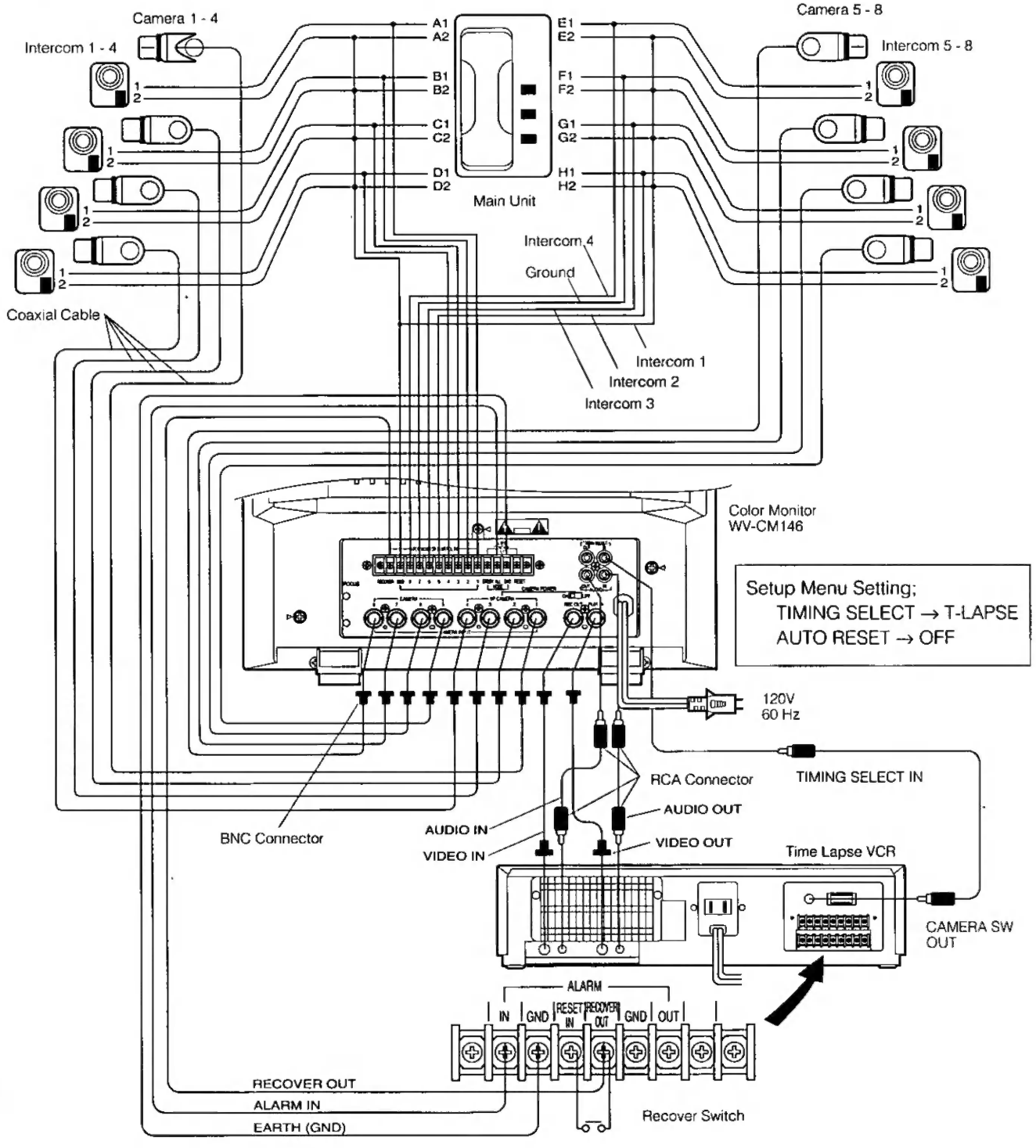
MENU 4

[RESET PULSE]	INPUT LEVEL	HIGH
[CAMERA SW]	TIMING MODE	1FIELD TM2

MENU 11

[TIME CODE]	POSITION	10H, 12H

■ Connection with Time Lapse VCR



Notes:

1. To cancel the alarm signal from the monitor, supply the reset signal of the monitor to the RESET IN connector of the VCR.
2. Refer to the Operating Instructions of Time Lapse VCR for recording details.
3. If you connect RECOVER OUT of the time lapse VCR to RECOVER IN of this monitor, AUTO RESET of this monitor does not work.

SPECIFICATIONS

Power Source:	120V AC 60 Hz
Power Consumption:	Approx. 110W
CRT Size:	36.8 cm (14" diagonal)
Actual Visual Size:	33.5 cm (13" diagonal)
Camera Input:	1.0 V[p-p]/75 Ω, composite × 8 (BNC) (specified VP multiplexed camera x 4)
Video Input:	1.0 V[p-p]/75 Ω, composite × 1 (BNC)
Video Output:	1.0 V[p-p]/75 Ω, composite × 1 (BNC)
Power Supply for Camera:	Regulated current multiplex method (INPUT 1 - 4: selectable Camera Power On/Off)
Camera Switching :	Manual/Auto (sequence) with auto bypass
Sequential Switching :	Approx. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30 sec. (selectable with SET UP MENU) • FRAME: • Time Lapse timing
Picture Display:	Quad/spot/Sequential/Switching/VCR Playback
Skip :	Automatic
Auto Reset :	Automatic reset circuit functions 60 sec. after receiving the sensor signal. (Auto reset on/off mode can be selected with SET UP MENU)
Resolution :	More than 370 lines at center
Sweep Linearity :	Horizontal: 5% or less Vertical: 5% or less
Sweep Distortion:	Approx. 8%
Scanning Frequency:	Horizontal: 15.734 kHz Vertical: 59.94 Hz
Audio Input :	–8 dB/Hi-z (pin-jack)
Audio Output :	–10 dB/100 Ω (pin-jack)
Speaker Output :	1.0 W
Intercom / Sensor Input :	1 circuit per camera
Alarm Output	
Video Standby mode :	1 circuit
Standby mode :	1 circuit
Alarm time :	Approx. 1, 5, 10, 20, 30, 40, 50, 60 sec. (selectable with SET UP MENU)
Timing :	Real time / Time Lapse (Selectable with SET UP MENU)
Camera Extension Length :	

Coaxial Cable Type	Maximum Cable Length	DC R/1000 ft. of Inner Conductor
RG-59/U	200 m (660 ft.)	Less than 30 Ω
RG-6/U	500 m (1650 ft.)	Less than 12 Ω

The maximum DC resistance of the coaxial cable between the cameras and video monitor is 20 Ω

Ambient Operating Temperature :	–10°C - +50°C (14°F - +122°F)
Dimension :	370 (W) x 354 (H) x 389 (D) mm [14-9/16"(W) x 13-1/2"(H) x 15-5/16"(D)]
Weight :	Approx. 12 kg (2.4 lbs.)

Weights and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

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N1096-0 YWV8QA4154AN Printed in Japan
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